# Psychopharmacology
Algorithm Development

A lgorithms and guidelines for psychopharmaco-
logic treatment are being developed through-
out the world by psychiatric associations,
regional organizations such as the European Col-
lege of Neuropsychopharmacology, university-
based programs, and others. The International
Psychopharmacology Algorithm Project (IPAP)
and several of its affiliates, including the Japa-
nese Psychopharmacology Algorithm Project
and the Chinese Psychopharmacology Algo-
rithm Project, has developed the algorithm
is detailed elsewhere in this issue (Davidson
et al., see page 887). Further information on
the IPAP development process is provided
in the Sidebar (see page 923).

It is important that clinicians understand
the context of the development of treatment
algorithms and guidelines such as these be-
cause they are being used increasingly as cog-
nitive artifacts in treatment decision making.
Two major trends in guideline development
are the financial disclosure by participants
and the progression toward evidenced-based
documentation of recommendations.[1-3] Nascent
efforts are under way to display the influence dia-
grams behind these algorithms (eg, weight given to
efficiency versus safety versus cost), as well as the
efforts to keep these algorithms current and, perhaps
the most difficult task, to have them used in practice.[1]
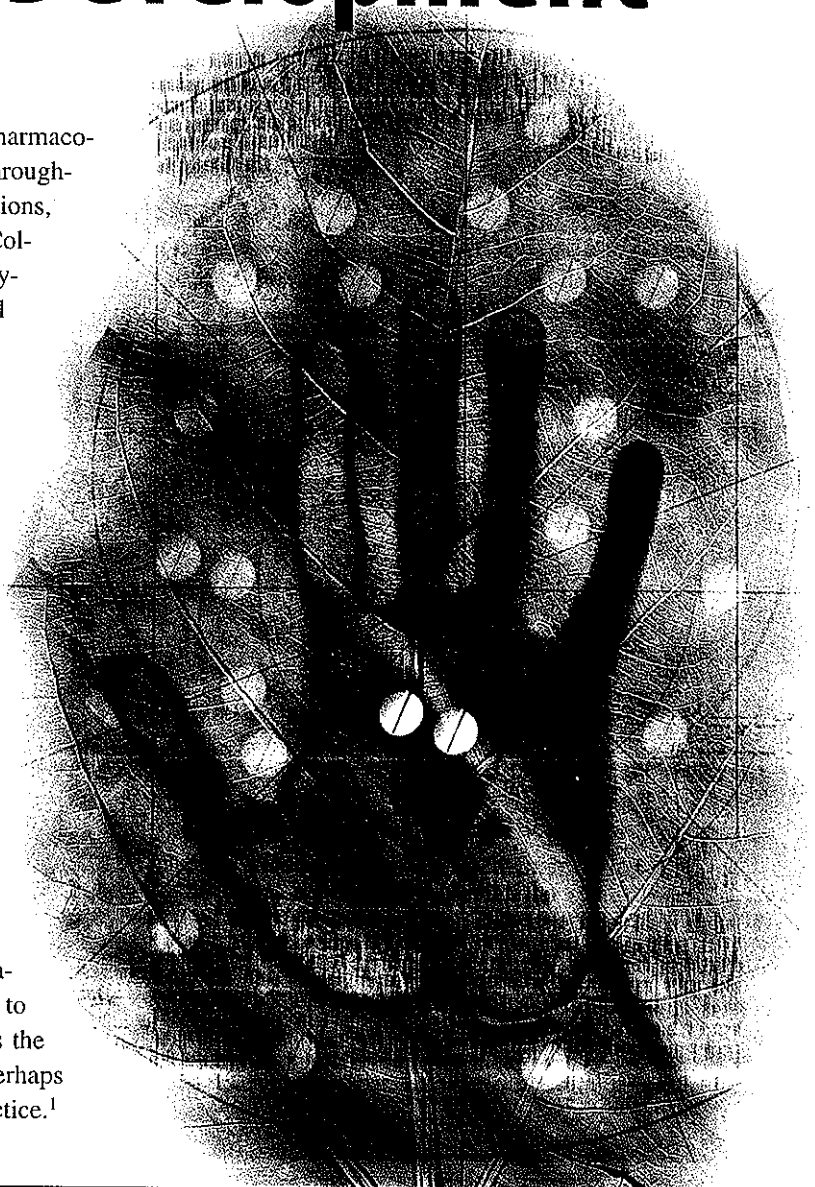
Kenneth O. Jobson, MD; Matthew J. Friedman, MD, PhD; and Dean S. Hartley, PhD

Colleagues internationally are recognizing the value of these algorithms and translations are becoming more common. For example, the IPAP PTSD algorithm is currently being translated into Mandarin, Spanish, Thai, Japanese, and Portuguese. Algorithms and guidelines are being used to promote medical decision making founded on evidence-based medicine. To contextualize recommendations from algorithms or guidelines, one must understand how the valiance was assigned to evidence, the scope or field of treatment options considered, who is making the recommendations, and their qualifications. This will be-

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The authors have no industry relationships to disclose.

come even more important if guidelines and algorithms are used as prescriptive instruments, not as descriptive tools.

PREVIOUS PTSD PRACTICE GUIDELINE INITIATIVES

To put the process of developing the IPAP algorithm in context, it is useful to consider three previous initiatives to develop evidence-based practice guidelines for PTSD. These initiatives were undertaken by the International Society for Traumatic Stress Studies (ISTSS), the American Psychiatric Association (APA), and a panel of experts convened jointly by the US Departments of Veterans Affairs and Defense (VA/DoD). In the case of the APA and VA/DoD initiatives, PTSD was but the latest of many disorders for which clinical practice guidelines had been developed. Therefore, there were precedents and formats within which the PTSD guideline had to conform. In contrast, the ISTSS effort, which was the first of the three, had had no previous organizational precedents to follow and therefore went about the process somewhat differently than the others.

ISTSS Guideline

ISTSS was the first to recognize the need for a clinical practice guideline and initiated the process in the late 1990s. It was chaired by Edna Foa with Terence Keane and Matthew Friedman serving as co-chairs. The guideline itself was published in 2000,[4] and a brief version was posted on the ISTSS website

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(http://www.istss.org). As with the APA and VA/DoD initiatives, all published research on PTSD treatment was graded with respect to the strength of the evidence, with randomized clinical trials receiving the highest grade and anecdotal reports anchoring the bottom end of the scale. In between were well-designed studies without randomization, compelling observations from naturalistic or health services research, descriptive/long-standing clinical practice for which there was no empirical data (eg, psychoanalytic psychotherapy), and long-standing psychiatric practice successfully tested with disorders other than PTSD (eg, marital/family therapy, psychosocial rehabilitation).

In short, ISTSS attempted to cast its net as widely as possible. As a result, twelve separate work groups of experts were convened to develop position papers on each of twelve treatment approaches. Assessment of PTSD was one of these groups. The others (in order of presentation) were: psychological debriefing, cognitive-behavior therapy, pharmacotherapy, treatment of children and adolescents, eye movement desensitization and reprocessing, group therapy, psychodynamic psychotherapy, inpatient treatment, psychosocial rehabilitation, hypnosis, marital and family therapy, and creative therapies. In other words, adherents of different therapies within ISTSS were all given an opportunity to present the strength of the empirical evidence supporting each aforementioned clinical
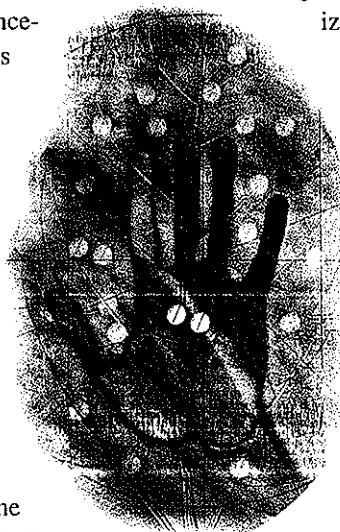
approach. Final recommendations presented general strength of the evidence, course of treatment, indications and contraindications for each treatment. No clinical algorithms were developed. It was hoped that this document would provide sufficient guidance for clinicians in the field who wished to use evidence-based treatments. The ISTSS practice guideline has been disseminated widely.

APA Guideline

The APA convened a small group of psychiatrists in 2002, chaired by Robert Ursano, to begin work on a "practice guideline for the treatment of patients with acute stress disorder and posttraumatic stress disorder" that was published 2 years later.[5] Rather than dividing into smaller work groups that focused specifically on one treatment modality, this small group of psychiatrists, with substantial support from APA staff, collectively reviewed the entire empirical literature on PTSD and acute stress disorder treatment. The format was identical to previous APA practice guideline formats for delirium, Alzheimer's disease, schizophrenia, major depressive disorder, bipolar disorder, eating disorders, borderline personality disorder, and treatment of psychiatric complications of HIV/AIDS. The APA guideline process was also linked closely with the American Medical Association and the Institute of Medicine.

As with ISTSS, each published article was graded with regard to the strength of the evidence favoring that particular treatment. In the last analysis, APA placed much greater emphasis on randomized clinical trials and other experimental data and included much less descriptive material than ISTSS. Therefore, a number of treatment approaches that had chapters to themselves in the ISTSS guideline received little or no mention by APA. As with previous APA guidelines, great attention was paid to the process of formulating and implementing a treatment plan. Special sections were devoted to focusing on specific clinical features and management issues that might influence such treatment plans, such as age, gender, ethnic/cross-cultural factors, medical/psychiatric comorbidity, history of previous trauma, aggressive behavior, and self-injurious and suicidal behaviors.

VA/DoD Guideline

The VA/DoD clinical practice guideline process chaired by Harold Kudlar and Bruce Crow,[6] while overlapping in many respects with the other two initiatives, was unique in a number of ways. A similarity with APA, but not with ISTSS, was that the VA/DoD work group followed a format that previously had been used for a number of medi-

cal and psychiatric disorders, including chronic heart failure, hypertension, diabetes, low back pain, chronic obstructive pulmonary disease, psychoses, and depression. Unlike the ISTSS and APA processes, which were developed for mental health clinicians, VA and DoD practitioners who participated in this process placed great emphasis on primary care as the likely clinical portal of entry for military personnel or veterans seeking treatment.

The VA/DoD guideline was only concerned with adults. It placed much greater emphasis on acute posttraumatic reactions within a war zone context. It was multidisciplinary and included: psychiatrists, psychologists, primary care physicians, nurses, pharmacists, occupational therapists, social workers, counselors, chaplains and administrators. The goal was to create an algorithm to aid field personnel and health care workers in identifying, assessing and, when indicated, providing treatment. Although tasked to develop algorithms for ASD and PTSD, the VA/DoD work group also provided decision trees for the management of acute stress response/combat stress response, a transient (2- to 4-day reaction) sometimes affecting personnel during combat exposure from which complete recovery is expected. In other words, the VA/DoD work group attempted to provide algorithms for the full range of posttraumatic reactions and disorders, with special sections addressing problems of chronicity, comorbid disorders, and negative health behaviors.

As with the other two initiatives, this process involved rigorous evaluation of the strength of the empirical evidence favoring one treatment or another. Two aspects of the VA/DoD process are similar to the present project. First, a series of algorithms were developed for a number of clinical scenarios. Second, these algorithms were not published in hard copy but posted to the VA website.[7]
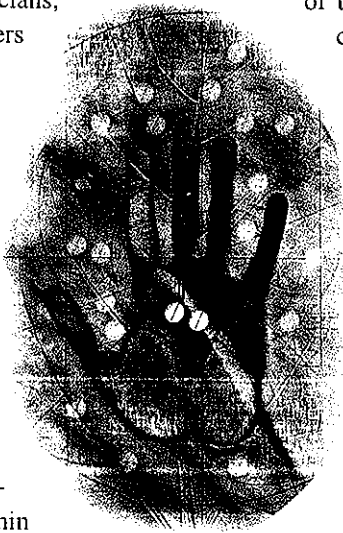
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CREATION OF THE IPAP PTSD ALGORITHM

The IPAP team used a modified form of the process used in creating its schizophrenia algorithm to create the PTSD algorithm. In both cases, a faculty of prominent experts in the field joined with a small group of experts in the area of presentation of algorithms to create and implement the presentation of the algorithm on the internet. The difference in the PTSD algorithm was the addition of an executive committee to create an initial, alpha algorithm for purpose of discussion. This difference resulted in a reduction in the time to complete the project, with no loss of connection to the evidence base.

In January of 2005, the Executive Committee produced the alpha algorithm as a document that described salient features of PTSD and its treatment. From this document, the Executive Committee and the presentation group produced a set of partial algorithm diagrams. At the same time, the faculty was recruited from eight countries and six continents around the world. The Committee distributed the algorithm documents to the faculty for consideration.

In February, the faculty participated in a teleconference for a preliminary discussion of the merits and problems of the initial algorithm documents. The conversation was documented and resulted in a revised algorithm, with extensive notes on the available evidence, called the beta version of the algorithm. Additionally, the faculty took assignments to research individual points needing further consideration. This work resulted in seven revisions to the beta version during the month of March.

The seventh version had taken the form of a unified diagram, with notes attached to each node. In April, the faculty participated in a second teleconference to discuss the seventh revision of the Beta version, particularly the details of the node notes. Following this teleconference, the faculty produced seven more revisions to the algorithm in April, May, and June, when the final version was ready for exposure on the Internet.

Content Procedures

The faculty had to make several decisions that were critical to the procedure. What should the content of the algorithm include? That is, what clinical condition(s) should be covered and what ones should not and to what extent should the algorithm extend beyond psychopharmacology? What levels of evidence should govern the creation of the algorithm? How, if at all, should the expert judgment of the faculty be used to extend what has been demonstrated in the literature?

The presentation group built on the results of the schizophrenia algorithm. Several basic principles were followed:

- If possible, the algorithm flow chart should fit on a single page.
- The flow chart should have as few nodes as possible.
- The flow chart should avoid flow lines crossing each other, if possible.
- The flow chart should have plenty of white space to make the macro flow lines evident.
- The flow chart should be self-explanatory at a consistent level of understanding of the algorithm.
- The wording in the flow chart should be readable.
- The flow chart should embody a deep enough level of understanding of the algorithm to be useful by itself.
- Additional information should be easily obtainable (by clicking on the nodes) and the method of obtaining the additional information should be clear to a novice user.

Naturally, many of these principles are in conflict. For example, to have plenty of white space, either the flow chart has to expand, the number of nodes must be reduced, or the size of the nodes must be reduced (either by making the font size of the words smaller, or by reducing the number of words or by abbreviating some of the words, or by some combination). Thus, the decisions were often compromises, based on the artistic talents of the group and the responses of the faculty and test audiences.

SUMMARY

A full description of the algorithm is provided elsewhere in this issue. This article has provided a review of the algorithm's development in an effort to help psychiatrists understand the context of algorithms and guidelines, as they are being used increasingly as cognitive artifacts in decision support in quality monitoring.

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